DOCUMENT RESUME

ED 120 184 SP 009 961

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TITLE A Comparison of CBTE and Conventional Teacher Education Programs.
PUB DATE [76]
NOTE 23p.

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage
DESCRIPTORS Administrator Attitudes; Elementary Education; Methods Courses; *Performance Based Teacher Education; Principals; *Program Evaluation; Teacher Attitudes; Teacher Certification; *Teacher Education; Teacher Educators; Teaching Experience

ABSTRACT

This study utilized elementary teachers who had completed either competency-based (CBTE) or conventional teacher education programs and their principals to evaluate undergraduate preparation for classroom teaching. A 15 item questionnaire was administered and the data analyzed. Results obtained from the analysis of the teachers' data indicated perceived differences in the emphases of CBTE and conventional teacher education programs. Program emphasis for CBTE-prepared teachers was on instruction, whereas an emphasis on structuring the classroom environment emerged for conventionally prepared teachers. Principals were unable to detect differences between competency-based or conventional preparation. Analysis of variance revealed non-significant F-ratios for both the principals and teachers groups. (DT)

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A Comparison of CBTE and Conventional Teacher Education Programs

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A Comparison of CBTE and Conventional Teacher Education Programs

The preparation of teachers is changing. Regardless of the arguments pro and con (4), the adoption of competency-based teacher education (CBTE) is becoming widespread, and the list of institutions joining these ranks is still growing. The movement toward CBTE is not difficult to understand since few attempts have been made in the past to hold schools of education accountable for teachers they have prepared. The notion that there is any correlation between an education degree and teaching capabilities is highly questionable (9). Spanjer indicates that the issue of accountability and the definition of what schools of education are about, are in one way or another wrapped up in the goals of CBTE (8). Most teacher educators would generally agree that some change is in order when new developments offer hope for improving the quality of teaching.

In a competency-based teacher education program, an individual's progress is measured by demonstrated performance of competence rather than the meeting of rigid course and time requirements. Competencies are derived from explicit conceptions of teachers' roles, made public in advance, and the individual is measured in terms of his performance regarding those previously identified competencies (2).

Competency-based teacher education programs represent a shift from primary focus upon knowledge and skill mastery to demonstrated competence. These programs also represent a departure from viewing teacher education as a mere training function to one based upon research and development, and instruction (6) (7). The shift from the university classroom to a field oriented approach, in which the program for preparing teachers is

functionally integrated into the profession, is perhaps the major characteristic of CBTE programs.

While CBTE has generated voluminous amounts of writing and discussion from various sources, it has been reported to have a weak research base (3). There are signs that an ever increasing amount of systematic evaluation is taking place in CBTE in the form of action research for the purpose of determining whether or not programs are attaining their goals. There is, however, little current research to specifically indicate that CBTE prepared teachers are more or less effective than their conventionally prepared counterparts.

One logical method for comparing effectiveness of the programs is to ask teachers and principals to evaluate them. The accountability issue, and the subsequent evaluation of teacher performance which it implies, is tied very closely to school principals' perceptions of the teacher's effectiveness in the classroom. The very name Competency-Based Teacher Education implies that participants will exit the program at a level of competence or mastery heretofore unobtainable. Therefore, gross differences in teaching effectiveness might logically be anticipated between graduates of CBTE programs and graduates of a more traditional structure. However, any claims for CBTE superiority are probably premature because greater effectiveness of teachers prepared in CBTE programs has not been empirically demonstrated.

Problem. The central concern of the investigator was to compare two preparation programs for elementary school teachers. This study attempted to determine 1) how elementary school principals evaluated CBTE and conventional undergraduate teacher education programs;

2) how teachers who completed the CBTE program evaluated their preparation for teaching; and finally, 3) how teachers who completed the conventional teacher education program evaluated their preparation for teaching.

Measurement Instrument. The inventory constructed for measurement in this study consisted of 15 items designed to reflect major components of elementary school teaching. The statements, couched in the language of CBTE, were evolved through collaborative efforts of public school teachers and principals, university students and faculty.

Respondents were asked to express their satisfaction with "preparedness" in regard to the behaviors expressed by the items according to a six point Likert-type scale ranging from "outstanding" (6) to "poor" (1) (Appendix I). True score reliability estimates were computed by treatment of the data through factor analysis. The resultant mean coefficient was .538, which was quite satisfactory for assuring individual stability on an instrument of this type. As the reliability of a measure is always greater than or equal to its communality (5), crude estimates of item reliability were ascertained from examination of the h^2 (communality) columns. The minimum value for item communalities for the principals was .420 ($p < .01$) and .534 for the teachers ($p < .01$).

Sample. The subjects consisted of elementary school teachers who had graduated from a large university teacher education program in 1973 and 1974, and the school principals for whom they worked. They represented rural, suburban and urban school systems in eight states. The inventory was administered to 235 teachers and 245 principals.

Data Analysis. In order to determine the dimensions of the principal and teacher responses regarding teacher preparation programs, four factor analyses were computed; one for principals employing CBTE

prepared teachers, one for principals employing conventionally prepared teachers, one for teachers who participated in the CBTE programs, and one for teachers who participated in the conventional program. In addition, a multivariate analysis of variance was computed to compare the responses of the two principal groups as well as to compare responses of the two groups of teachers.

The data from each group of principals was factor analyzed separately. Both the principal axis factor solution and rotated varimax solutions were computed. For clarity of interpretation, a two factor solution was accepted for each analysis.

The factors which emerged for each group of principals were named "Instructional Behavior" and "Professional/Ethical Behavior". Of the fifteen items, nine aligned with "Instructional Behavior" and six with "Professional/Ethical Behavior". The two factors accounted for 72.7% of the variance for the principals of CBTE prepared teachers and 78.9% of the variance for the principals of conventionally prepared teachers. Table I summarizes the results of the factor analysis of the data obtained from principals who employed CBTE prepared teachers.

Table I Rotated Factor Loadings* for Principal's Responses in Regard to CBTE Prepared Teachers

Item	Factor I	Factor II	h^2
Factor I: Instructional Behavior			
1. Determines needs of learners	.866		.804
2. Plans activities for learners	.727	.477	.757
3. Selects appropriate materials for instruction	.759	.324	.681

Table I (Continued)

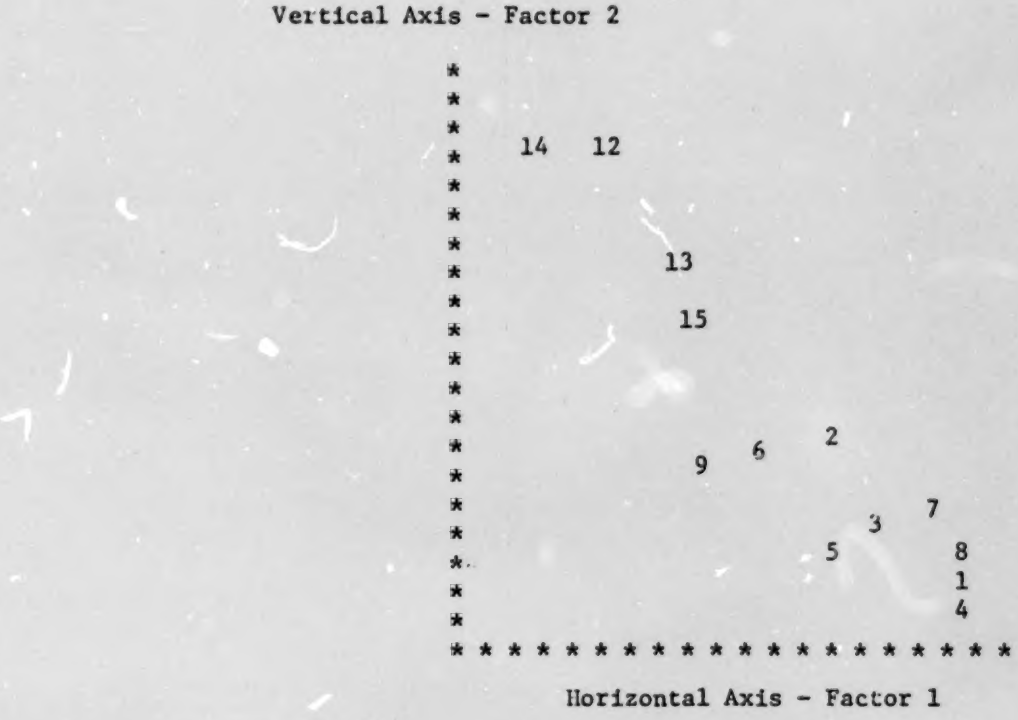
4. Employs a variety of teaching strategies	.882		.812
5. Maintains environment conducive to learning	.724		.613
6. Utilizes control procedures appropriate to situation	.646	.436	.608
7. Employs a variety of evaluative procedures	.846	.371	.854
8. Evaluates effectiveness of program	.866		.840
9. Performs necessary administrative and technical activities	.520	.386	.420
Factor II: Professional/Ethical Behavior			
10. Communicates effectively with others	.523	.635	.677
11. Works cooperatively with others		.852	.795
12. Demonstrates responsible behavior		.870	.821
13. Utilizes feedback to improve professional competence	.471	.733	.759
14. Demonstrates ethical behavior		.859	.775
15. Accounts for fulfilling institutional goals	.527	.649	.698

*Factor loadings below the value of .300 are not reported in the table.

A two factor solution was accepted even though there seemed to be sufficient evidence to accept the principal axis factor solution (based upon eigenvalues 9.386 vs 1.520). The principal axis factor solution was rejected, however, because clear interpretation of the results was more difficult. Factor rotation produced two factors which were dissimilar to the original solution with no repetition of items in the factors. This independence among the two item clusters greatly facilitated their interpretation.

Figure 1 portrays the highly linear spatial or geometric nature of the CBTE principals' item loadings. The two factors from this group's data were used as reference axes upon which the factor loadings were plotted. In this case, the item number was utilized to illustrate its coordinate position.

Figure 1. Factor Loadings on the Diagonal Axis of Principals' Responses for the CBTE Program of Teacher Education



The responses of principals of conventionally prepared teachers were factor analyzed by the principal axis factor solution and, as in the previous case, the resultant factors were rotated by the orthogonal varimax procedure. The same reasoning, as before, was applied to this analysis even though (eigenvalue 10.649 vs 1.183) seemed to point toward accepting a one factor solution. The principal axis solution was again rejected because it did not provide the means for achieving maximum clarity for interpretation of the data. The orthogonal rotations, as in the previous case, were employed to maintain the independence of the factors. The results of this analysis are summarized in Table II.

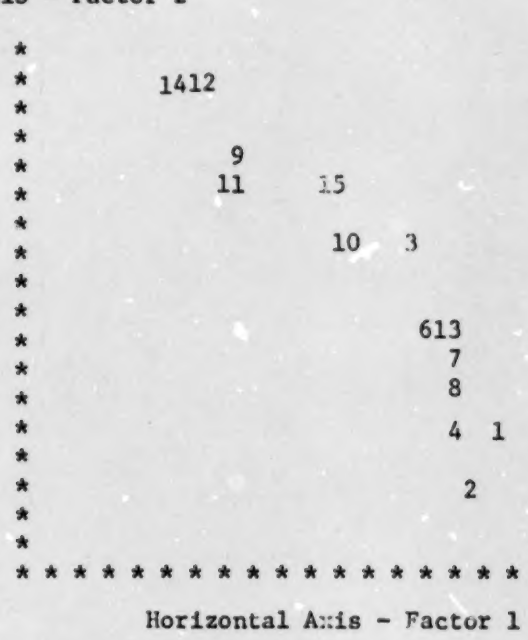
Table II. Rotated Factor Loadings* for Principals' Responses to Conventional Program Teacher Education

Item	Factor I	Factor II	h^2
Factor I: Instructional Behavior			
1. Determines needs of learners	.884	.335	.894
2. Plans activities for learners	.826		.720
3. Selects appropriate materials for instruction	.658	.603	.797
4. Employs a variety of teaching strategies	.775	.306	.694
5. Maintains environment conducive to learning	.771	.432	.781
6. Utilizes control procedures appropriate to situation	.708	.504	.755
7. Employs a variety of evaluative procedures	.768	.465	.805
8. Evaluates effectiveness of program	.779	.425	.788
13. Utilizes feedback to improve professional competence	.766	.503	.840
Factor II: Professional/Ethical Behavior			
9. Performs necessary administrative and technical activities	.355	.796	.759
10. Communicates effectively with others	.580	.629	.731
11. Works cooperatively with others	.393	.735	.694
12. Demonstrates responsible behavior	.307	.898	.901
14. Demonstrates ethical behavior		.865	.821
15. Accounts for fulfilling institutional goals	.540	.747	.851

*Factor loadings below the value of .300 are not reported in the table.

Figure 2 graphically illustrates the geometric nature of the factor loadings for the responses of principals employing conventionally prepared teachers. Again, the two factors produced from this group's data were used as reference axes upon which the factor loadings were plotted. The item number was used to illustrate its coordinate position.

Figure 2. Factor Loadings on the Diagonal Axis of Principals' Responses for Conventional Program of Teacher Education



The separate factor analyses of the principals' data revealed only minor differences in the manner in which the two groups perceived CBTE and conventional undergraduate teacher education programs. Besides expected differences in the correlation values of the items in loading on factors, only two of the items, numbers 9 and 13, were interchanged in the factor matrices. For the principals of CBTE, item 9 loaded on Factor I, while item 13 loaded on Factor II. The inverse was true for the principals of conventional program teachers.

The two groups of principals seemed to view the undergraduate preparation of their teachers similarly. The teacher preparation programs were seen by the principals to consist of two major components: 1) teacher behaviors relating to instruction; and 2) teacher behaviors

relating to professional and ethical conduct. This seems to suggest that the principals were not able to discriminate among the various components of teaching or instruction. In other words, the principals seemed to evaluate the teacher preparation in terms of general teaching behaviors and those teacher behaviors which are not directly related to teaching, but are involved with the socialization of the teacher within the teaching profession.

Factor I represents those items relating to instructional behaviors which are based upon knowledge, skills, and abilities that can be acquired in a teacher education program, while Factor II represents those behaviors which may have been brought to the program by the individual. It is questionable what influence undergraduate teacher education had upon the behaviors related to the latter area.

Analysis of variance was employed to compare the responses of the two groups of principals for each of the items on the inventory. Raw scores for each group on each of the fifteen variables were transformed into F Values as shown in Table III.

Table III. Analysis of Variance of Principals' Responses to CBTE and Conventional Undergraduate Teacher Education

Source of Variation	df	Mean Square	F-Ratio	P
1. Determines needs of learners	1,109	0.6350	0.888	n.s.
2. Plans activities for learners	1,109	0.1313	0.152	n.s.
3. Selects appropriate materials for instruction	1,109	0.0486	0.061	n.s.

Table III (Continued)

4. Employs a variety of teaching strategies appropriate to situation	1,109	0.0491	0.064	n.s.
5. Maintains an environment conducive to learning	1,109	1.1609	1.109	n.s.
6. Utilizes control procedures appropriate to situation	1,109	0.6321	0.567	n.s.
7. Employs a variety of evaluative procedures appropriate to the situation	1,109	0.0024	0.003	n.s.
8. Evaluates the effectiveness of the instructional program	1,109	0.0588	0.069	n.s.
9. Performs necessary administrative and technical activities	1,109	0.0896	0.125	n.s.
10. Communicates effectively with others	1,109	0.7429	0.969	n.s.
11. Works cooperatively with others	1,109	0.0283	0.037	n.s.
12. Demonstrates responsible behavior	1,109	1.9812	2.641	n.s.
13. Utilizes feedback to improve professional competence	1,109	1.3364	1.636	n.s.
14. Demonstrates ethical behavior	1,109	1.4661	1.796	n.s.
15. Accounts for fulfilling institutional goals	1,109	2.0442	2.462	n.s.

The analysis of variance of the principals' data by groups yielded non-significant F-ratios on each of the fifteen items, providing further evidence of the similar manner in which the two groups of principals viewed the teacher education programs. Interaction effects were also found to be non-significant.

Additional discriminative information concerning CBTE and conventional teacher preparation was obtained by factor analysis of the data from the teachers who had completed these programs.

For each group, the teachers responses were factor analyzed by the principal axis solution and the resultant factors were rotated by the orthogonal varimax procedure. In the case of the teachers completing the CBTE program, the principal axis factor solution was rejected because it did not provide the means to achieve maximum clarity for interpretation of the data. Orthogonal rotations were employed to maintain the independence of the factors. In this instance, four factors satisfied Kaiser's criterion of roots greater than one, and accounted for 76.2% of the total variance. The investigator isolated those items which clustered around each factor and identified them as: "Instructional Procedures", Factor I; "Professional Behavior", Factor II: "On-the-Job Relationships", Factor III; and, "Instructional Planning", Factor IV. Results of the factor analysis of the CBTE teachers' responses are summarized in Table IV.

Table IV. Rotated Factor Loadings* for CBTE Prepared Teachers' Perceptions of Their Undergraduate Preparation for Teaching

Item	Factor I	II	III	IV	h^2
Factor I: Instructional Procedures					
1. Determines needs of learners	.811			.333	.779
2. Plans activities for learners	.764				.630
3. Selects appropriate materials for instruction	.688	,391			.665
6. Utilizes control procedures appropriate to situation	.650			.493	.717
9. Performs necessary administrative and technical activities	.671	.307	.319		.658

Table IV (Continued)

Factor II: Professional Behavior					
13. Utilizes feedback to improve professional competence	.323	.811			.821
14. Demonstrates ethical behavior		.741	.438		.766
15. Accounts for fulfilling institutional goals		.775		.380	.845
Factor III: On-the-Job Relationships					
7. Employs a variety of evaluative procedures appropriate to the situation			.740	.345	.736
10. Communicates effectively with others		.328	.760		.836
11. Works cooperatively with others		.434	.777		.870
12. Demonstrates responsible behavior	.369	.358	.721		.800
Factor IV: Instructional Planning					
4. Employs a variety of teaching strategies appropriate to the situation				.740	.726
5. Maintains environment conducive to learning			.333	.786	.813
8. Evaluates effectiveness of instructional program	.511		.398	.590	.768

*Factor loadings below the value of .300 are not reported in the table.

The four factors which emerged from the analyses of the data obtained from the CBTE prepared teachers seemed to suggest that they viewed their undergraduate teacher education as being composed of separate and distinct elements, each consisting of a clearly identifiable set of behaviors.

The analysis of the data obtained from the conventional program teachers also resulted in accepting a four factor solution. Kaiser's criterion of roots greater than one was again applied. The four factors, in this instance, accounted for 74.6% of the total variance. The items which clustered around each factor suggested the factor descriptions: "Professional Behaviors", Factor I; "Instructional Planning", Factor II; "Instructional Procedures", Factor III; and, "Maintains an Environment Conducive to Learning", Factor IV. The results of this analysis are summarized in Table V.

Table V. Rotated Factor Loadings* for Conventionally Prepared Teachers' Perceptions of Their Undergraduate Preparation for Teaching

Item	Factor I	II	III	IV	h^2
Factor I: Professional Behaviors					
10. Communicates effectively with others	.856				.844
11. Works cooperatively with others	.891				.915
12. Demonstrates responsible behavior	.813	.368			.855
13. Utilizes feedback to improve professional competence	.649	.435	.351		.735
14. Demonstrates ethical behavior	.613			.471	.652
15. Accounts for fulfilling institutional goals	.626	.461			.720

Table V (Continued)

Factor II: Instructional Planning					
1. Determines needs of learners		.593			.534
2. Plans activities for learners		.674			.592
3. Selects appropriate materials for instruction		.857			.812
4. Employs a variety of teaching strategies appropriate to the situation	.366	.607	.411		.684
8. Evaluates effectiveness of instructional program		.574		.551	.722
9. Performs necessary administrative and technical activities	.440	.469			.629
Factor III: Instructional Procedures					
6. Utilizes control procedures appropriate to the situation		.367	.688	.510	.843
7. Employs a variety of evaluative procedures appropriate to the situation			.810		.786
Factor IV: Maintains An Environment Conducive To Learning					
5. Maintains environment conducive to learning			.300	.787	.859

*Factor Loadings below the value of .300 are not reported.

Examination of the factor matrices for the two groups of teachers revealed differences in the manner in which they viewed their preparation. Because of the way the items associated with the factors in the solution for the CBTE teachers' data, interpretation was by far the easier of the two analyses. The number of items which were associated with the factors for CBTE teachers ranged from three to five.

It was determined that the four factors for the CBTE prepared teachers were completely independent. The factor descriptions represented major components and behaviors of the CBTE program. Two factors were

identified as having direct association with "instruction" (procedures and planning), a primary focus of the CBTE program. A major emphasis of the CBTE program is the attainment by its participants of a level or state of teaching competence through performances. This is clearly represented in the matrix by the items associated with the instructional factors.

The remaining two factors seem to relate to interpersonal relationship behaviors and those of a professional/ethical nature. While it is reasoned that a lesser emphasis is placed upon these aspects of the undergraduate competency-based teacher education program, it is difficult to determine which behaviors were influenced by the program and which were acquired by the student prior to entering teacher education.

The factor matrix for the conventionally prepared teacher group was more difficult to interpret in that items were not evenly distributed in their association with the factors. The number of items loading on factors ranged from one to six. The fact that conventional program students have limited field-based experiences while their CBTE counterparts have rather extensive public school classroom contacts is thought to be a major reason that the separate analyses differed widely.

The analysis of the conventionally prepared teachers' data revealed one factor (Factor IV: "Maintains An Environment Conducive To Learning") as consisting of only one item representing this behavior. It is thought that this is a behavior which is emphasized in the conventional program. Furthermore, the items which were mainly associated with interpersonal relationships and professional/ethical behavior emerged from this analysis in one factor: "Professional Behaviors" rather than in two as in the CBTE teachers' matrix.

The two groups of teachers viewed only one of the fifteen items similarly. Item 4, "employs a variety of teaching strategies..." emerged from the separate analyses as loading on the same factor "Instructional Planning".

From the separate analyses, it was reasoned that the two undergraduate teacher education programs differed in the manner in which teaching behaviors were emphasized. For the CBTE program, the emphases seem to be in the areas of practical application of learnings in field-based settings and the quality of performance of specified teaching behaviors. On the other hand, the conventional program emphasis was broader, encompassing all the teaching behaviors on the inventory not focusing primarily in one area or the other.

Analysis of variance was employed to compare the responses of the CBTE and conventional program teacher groups. Raw scores for each group on each of the fifteen items in the inventory were transformed into F values. This analysis is summarized in Table VI.

Table VI. Analysis of Variance of Teachers' Responses for CBTE and Conventional Undergraduate Teacher Preparation

Source of Variation	df	Mean Square	F-Ratio	P
1. Determines needs of learners	1,215	0.410	.467	n.s.
2. Plans activities for learners	1,215	0.617	.694	n.s.
3. Selects appropriate materials for instruction	1,215	0.183	.205	n.s.
4. Employs a variety of teaching strategies appropriate to situation	1,215	2.042	1.954	n.s.
5. Maintains an environment conducive to learning	1,215	1.936	1.761	n.s.
6. Utilizes control procedures appropriate to the situation	1,215	3.320	2.695	n.s.

Table VI (Continued)

7. Employs a variety of evaluative procedures appropriate to the situation	1,215	0.403	0.483	n.s.
8. Evaluates the effectiveness of the instructional program	1,215	0.121	0.122	n.s.
9. Performs necessary administrative and technical activities	1,215	0.083	0.075	n.s.
10. Communicates effectively with others	1,215	0.322	0.328	n.s.
11. Works cooperatively with others	1.215	0.244	0.258	n.s.
12. Demonstrates responsible behavior	1,215	0.677	0.879	n.s.
13. Utilizes feedback to improve professional competence	1,215	0.238	0.246	n.s.
14. Demonstrates ethical behavior	1,215	1.220	1.371	n.s.
15. Accounts for fulfilling institutional goals	1,215	1.237	1.418	n.s.

It was reasoned from the different manner in which the two teacher groups viewed their undergraduate preparation, as revealed from the factor analyses, that analysis of variance might shed light in the examination and interpretation of these discovered differences. However, the analysis of variance yielded non-significant F-ratios on each of the items in the inventory. This result was somewhat surprising in light of the differences which emerged from the factor analyses. Interaction effects were also found to be non-significant. While it appears that each undergraduate teacher education program has its unique emphasis, the programs appear to be viewed by the teachers as being similar in net results: that of preparing them for the classroom.

Discussion. The central focus of this study was the comparison of teachers' and principals' views of CBTE and conventional teacher education programs. Differences in emphases of the two programs were noted in the separate factor analyses of the teachers' data. These differences were: 1) program emphasis for CBTE prepared teachers was upon "instruction", an expected result since attainment of specific teaching abilities is a primary focus of CBTE; 2) for conventionally prepared teachers, an emphasis upon structuring the classroom environment emerged.

The principals' analyses did not differ. Analysis of variance revealed non-significant F-ratios for both the principals' and the teachers' groups. Interaction effects were also non-significant.

Principals were unable to detect differences between competency-based or conventional preparation. It is suspected that the majority of principals do little first hand observation of instruction, relying upon reports from instructional supervisors, other teachers or parents for feedback concerning teachers' classroom performances. The global view that the principals had of the teacher preparation process was probably due to the fact that principals are generally not directly involved in the teacher education program and, therefore, were unable to discriminate among the various elements upon which the programs were built. Being removed from direct involvement with children in instructional settings also places the principal at a disadvantage in making discriminative judgments about college programs which concentrate upon preparing an individual to work in the classroom.

The fact that no significant differences were derived from the analysis of variance of the teachers' data may be due to a number of factors. Different results may have been attained had the study been conducted over a longer period of time with a larger population of CBTE prepared teachers. Another possibility is that the difference between the preparation programs might lie in other dimensions; i.e., teacher self-concept or pupil achievement. Perhaps CBTE, as a medium for teacher preparation, is so new that expected differences in teaching performance have yet to emerge.

Greater differential information might have been provided from data collected from a different population of educators, teaching peers, for example. The study did suggest, however, that principals probably ought not be a target population for evaluating teacher education programs due to the fact that they tend to view teacher preparation programs in global rather than specific terms.

The movement of teacher education programs from the college classroom to the public school classroom has been a rapid one. Because of the swift adoption of CBTE by colleges and universities, there has not been sufficient emphasis upon assessing the impact CBTE might have in helping to prepare more effective teachers. While it is generally believed that CBTE will eventually emerge as the most viable means for preparing future teachers, a broad research effort is necessary to provide the base to adequately assess the effects of CBTE upon the teaching profession (2). Research in this area may need to focus on the learning of pupils taught by CBTE and conventionally prepared teachers.

The results of this study, therefore, must be interpreted cautiously since the data used represent only one of many such programs in existence. It is believed, however, that this work can provide some direction for future research of the effectiveness of teacher preparation programs.

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APPENDIX I

INSTRUCTIONS: Please circle the number which best describes your views concerning the undergraduate program for preparation for teaching.

	OUTSTANDING					POOR
1. Determines the needs of learners	6	5	4	3	2	1
2. Plans activities for learners	6	5	4	3	2	1
3. Selects appropriate materials for instruction	6	5	4	3	2	1
4. Employs a variety of teaching strategies appropriate to the situation	6	5	4	3	2	1
5. Maintains an environment conducive to learning	6	5	4	3	2	1
6. Utilizes control procedures appropriate to the situation	6	5	4	3	2	1
7. Employs a variety of evaluative procedures appropriate to the situation	6	5	4	3	2	1
8. Evaluates the effectiveness of the instructional program	6	5	4	3	2	1
9. Performs necessary administrative and technical activities	6	5	4	3	2	1
10. Communicates effectively with others	6	5	4	3	2	1
11. Works cooperatively with others	6	5	4	3	2	1
12. Demonstrates responsible behavior	6	5	4	3	2	1
13. Utilizes feedback to improve professional competence	6	5	4	3	2	1
14. Demonstrates ethical behavior	6	5	4	3	2	1
15. Accounts for fulfilling institutional goals	6	5	4	3	2	1